Educational Epiphany ™
Districtwide PLC Protocol for **Science**

Overton HS
2023-2024 SYR
Science Lesson Plans

Teacher/Teacher Team: Dr. Pani
Grade: 09
Date: 09/25-09/29/2023

Lesson Plans should be posted by 3PM each Friday.

#	Planning Question	Teacher/Teacher Team Response
1	Which **state standard** is your lesson progression addressing?	PSCI.PS2.1 Use mathematical representations to show how various factors (e.g., position, time, direction of force) affect one-dimensional kinematics parameters (distance, displacement, speed, velocity, acceleration). Determine graphically the relationships among those one-dimensional kinematics parameters. PSCI.PS2.2 Algebraically solve problems involving constant velocity and constant acceleration in one dimension
2	What **scientific concepts or phenomena** are embedded in the state standard?	The motion of an object can be described and predicted using known relationships between displacement, velocity, acceleration, and time. Other phenomenon videos available at: https://www.ngssphenomena.com/search?q=motio n (*Woodpecker in Slow Motion, Sailing Stones, Slinky Free Fall, Human Loop, Snow Donuts, Sound barrier, and Changing Forces) Sailing Stones Wait, did it even move? (Sailing Stone captured in the image above.) How do we know something even moved? What do we have to do to determine if movement
3	What teacher **knowledge, reminders, and misconceptions** are assumed in the standard?	Misconception(s) • Students may think that distance and displacement are the same. The terms sound similar, which may cause students' confusion. Remind them that distance is the length traveled while displacement is the distance and direction between the initial position and the final position. • Students sometimes interpret the height of a distance-time graph as its slope. The steepness of the straight line of a distance-time graph is the slope. This shows the speed. The height of the line is the farthest distance the object has traveled in the positive direction. • Students do not see motion as belonging to a number of different categories at rest, constant velocity, speeding up, slowing down, changing direction, etc. Instead, they see motion as moving or not moving. • Students think that if speed is increasing that acceleration is also increasing. • Students regard objects at rest as being in a natural state in which no forces are acting on the object Students who recognized a holding force, differentiated it from pushing or pulling forces. • Students think air pressure, gravity, or an intervening object (like a table) is in the way keeps and

		object stationary. • Students think that the downward force of gravity must be greater than an upward force for the book to be stationary.
4	What **objective(s)** must be taught? In what order? Why?	•SWBAT use mathematical representation IOT show how various factors (e.g., position, time, direction of force) affect one-dimensional kinematics parameters (distance, displacement, speed, velocity, acceleration). •SWBAT graphically represent various factors (position, time, direction of force) IOT show the relationships among those one-dimensional kinematics parameters (distance, displacement, speed, velocity, acceleration). •SWBAT use algebraic techniques IOT solve problems involving constant velocity and constant acceleration in one-dimension. •SWBAT create a distance and velocity vs. time graph IOT analyze an object's motion in terms of average speed and acceleration, changes in speed or acceleration, and the lack of motion scientific journal and/or lab notebook IOT record qualitative and quantitative data.
5	What is your **resource plan for each of the 5 Es** of inquiry-based science instruction? 1. Engage 2. Explore 3. Explain	Curricular Resources Textbook: Glencoe Physical Science Log into Pearson Savvas Realize platform via Clever and Canvas before accessing hyperlinked materials. Chapter 2: Motion • Section 1: Describing Motion, pp. 44-50 • Section 2: Velocity and Momentum, pp. 51-55 • Section 3: Acceleration, pp. 56-60 Suggested Activities Engage • Tie into Prior Knowledge: Speed Limits, TE p. 44. • Tie into Prior Knowledge: Facets of Meaning TE p. 44 • Main Idea: Comparing Speeds, TE p. 44 • Quick Demo: Car Ramps, p. TE p. 47 • Tie to Prior Knowledge: Distance and Displacement, TE p. 51 • Main Idea: Escalators, TE p. 51 • Animation: Throwing and Dropping a Ball • Tie to Prior Knowledge: Floor It, TE p. 56 • Tie to Prior Knowledge: Activate Background Knowledge TE p. 56 Explore • Visual Learning: Figure 3, TE p. 45 • Virtual Lab: Describing Motion • Mini Lab: Measure Average Speed, TE p. 48 • Animation: Motion of Earth's Continents • Reading STRATEGY: Determine Importance, TE p. 54. • Mini Lab: Determine the Direction of Acceleration, TE p. 57 • Lab: Motion Graphs, TE p. 61 • Lab: The Momentum of Colliding Objects, TE p. 63 Explain • Use an Analogy: Lined Paper, TE p. 45 • Reading STRATEGY: Paired Reading, TE p. 46. • BrainPOP: Acceleration • Visual Learning: Figure 19, TE p. 60 • Check for Understanding: Kinesthetic, TE p. 60 Elaborate • Reinforcement: Describing Motion (Questions 1-10) • Reinforcement: Velocity and

		Momentum (Questions 1-8) • Reinforcement: Acceleration (Questions 1-10) • Activity: Speed Limits, TE p. 46 Evaluate • Example Problem 1: PRACTICE Problems, p. 46 (1-3) • Caption Question: Figure 5, p. 48 • Caption Question: Figure 7, p 49 • Example Problem 2: PRACTICE Problems, p. 54 • Section 2 Review: Questions 16 – 18, p. 55 • Visual Learning: Figure 16, TE p. 57 • Performance: A bus is traveling through the city. It travels 100 km in the first 2 h and 120 km in the second 2 h. It stops for 1 h, then it finishes the route by going 100 km in 2 h. Draw a distance-time graph of the bus's motion.

	4. Elaborate 5. Evaluate	
6	What **academic language** must be taught **before and after the explain phase**? How will the academic language be **taught and assessed**?	distance, displacement, motion speed, position, rate of change of position, momentum, velocity, acceleration, centripetal acceleration Students are required to define each word as a sentence using the textbook.
7	What is your plan to ensure that assessment of instruction on this standard is not solely characterized by remembering or **regurgitating information**?	Launch Lab: Technology in Your Life, TE p. 4 • Introduce the Chapter: Discuss, TE p. 5 • Tie to Prior Knowledge: What is Science? TE p. 6 • Differentiated Instruction: Challenge, TE p. 6 • Differentiated Instruction: Struggling Learner, TE p. 7 • Activity: Venn Diagram, TE p. 7 • Use an Analogy: Finding Classrooms, TE p. 8 • Discussion: Hypothesis Confirmed, TE p. 8 • Inquiry Lab: The Path of Theory Development, TE p. 10 • Quick Demo: The Scientific Method, TE p. 11 • Tie to Prior Knowledge: Measuring, Visualize, and Table 5, TE p. 14 • Identify Misconceptions: SI Precision, TE p. 15 • Activity: Relative Volume, TE p. 14 • Activity: Rulers, TE pg. 17 • Minilab: Determine the Density of a Pencil, p. 18 • Activity: Different Measurements, TE p. 19 • Tie to Prior Knowledge: Finding Graphs and Charts and Graphs, TE p. 21 • Visual Learning: Graphing Data, TE p. 2
8	What **literacy concept** can be intertwined with instruction on this scientific concept or phenomenon?	Textbook study and Online Research Evaluate • Assessment: Oral, TE p. 4 • Reteach: Freezing Water, TE p. 13 • Section 1 Review, p. 12 • Reteach: Candle Wicks, TE p. 25 • Standardized Test Practice, pp. 40-41
9	How will instruction be impacted by the Cross Cutting Concepts and the Science & Engineering Practices?	Suggested Science and Engineering Practice(s) • Asking Questions Suggested Crosscutting Concept(s) • Patterns • Cause and Effect • Scale, Proportion, and Quantity Use vocabulary words to define, and form sentences.